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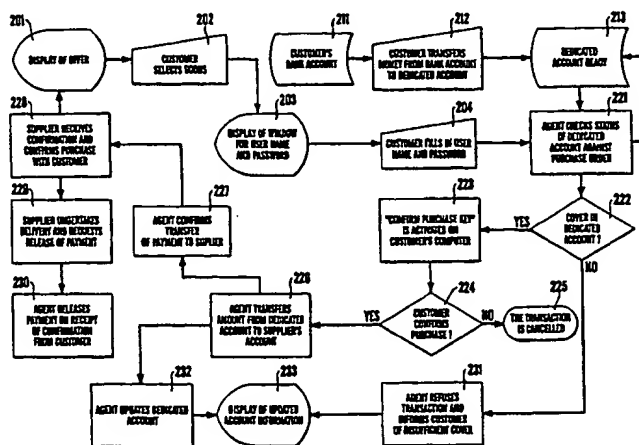
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(54) Title: METHOD AND DEVICE FOR PAYMENT OF GOODS AND SERVICES OVER A COMPUTER NETWORK



(57) Abstract

A method and a system are described for payment of goods and services which are ordered via a computer network, for example the Internet. A customer wishing to use the system opens a dedicated bank account where he is preferably only in a position to deposit money. When an item or service is ordered, an agent will compare the balance of this account with the price of the item or service. If the balance is higher than the price the agent will transfer an amount corresponding to this price from the customer's dedicated account to an account belonging to the vendor of the item or service. The amount, however, is not made immediately available to the vendor. The agent then transfers a confirmation that the amount has been transferred to the vendor, thus enabling him to deliver the item or service. After having received the ordered item or service the customer will transfer a confirmation of this to the agent who then releases said amount to the vendor. The system is particularly suitable for the sale of goods or services which are delivered directly to the customer, such as, for example, airline tickets, where it will be possible to attain the necessary security without the use of complicated encryption algorithms during data transfer.

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Method and device for payment of goods and services over a computer network

The present invention relates to a method for secure payment of goods and services via a computer network. The invention relates more particularly to a method for such secure payment which is not dependent on encryption algorithms or other forms of secure data communication.

With the steadily increasing spread of the Internet and thereby the steadily increasing choice of goods and services offered via the Internet, a need has arisen for payment systems which guarantee security for both customers and vendors of goods and services, but which at the same time are not so unmanageable or cumbersome to use that they discourage potential customers from using them.

The lack of good payment systems is probably the main reason why trade via the Internet has not reached even greater proportions, and why a number of the vendors who set up business via the Internet experience lower sales than expected.

A number of different payment systems have been proposed which attempt to solve this problem. The common feature of most of them is that they employ some form of encryption for transfer of payment information. The simplest systems are based solely on such encryption, where the information which is transferred is traditional payment information, such as, for example, a credit card number. More sophisticated systems are based on additional security in the form of features which are peculiar to data-based payment systems. These usually include the advanced use of encryption algorithms combined with some form of authorisation service. This authorisation service is usually supplied by a different company than that or those managing the actual payment service, with the result that a large number of participants as well as complicated and non-user-friendly encryption and authorisation algorithms are involved. An overview of different payment systems of this type can be found by referring to IEEE Spectrum, Special Issue: Electronic Money, Vol. 34 no. 2, February 1997, USA.

International patent application with publication number WO 98/14921 discloses a system where an agent is the only one possessing sensitive information, and who, after confirmation has been received from the

customer, can debit the customer's account to the seller's advantage. This system requires the customer to open a separate account with the agent, thus enabling the agent to undertake payment of an item or service based on a received payment order containing an identification of the customer. The customer then receives an authenticated payment confirmation from the agent. On the basis of this, a payment confirmation is transferred from the customer to the vendor, whereupon the vendor, preferably after having had the payment confirmation he has received verified, delivers the item or service to the customer.

US patent 4 750 119 discloses a payment system with a built-in discount function. It is the discount function which is the main feature of this publication, but it exhibits some other features which are relevant. Here a customer orders an item or service from a "trading centre" which verifies the order and receipt of payment. In one version the trading centre sends the payment and instructions to pay the indicated vendor to a third party. This third party is then responsible for payment to the vendor.

WO 97/19414 discloses a system where a small account is opened with electronic money which is managed by a third party, and where communication related to the account is transmitted in encrypted form via a computer network.

The common feature of the previously known systems is that a choice has to be made between complexity and degree of security. It is an object of the present invention to achieve a high degree of security when paying via a computer network such as, for example, the Internet without the system becoming unnecessarily complicated. This is achieved by means of the features which are set forth in claim 1.

The present invention provides a secure payment system for use in trading goods and services via computer networks such as the Internet without the use of unnecessarily complicated encryption algorithms. In a preferred embodiment of the invention it is also unnecessary to install specialised software in the user's computer. The system can thereby also be employed by users who do not possess the knowledge required for installing such software. Nor does the system require special hardware such as, for example, card readers.

The invention further ensures that the vendor will receive his payment in a secure manner. The system according to the present invention will therefore be an acceptable alternative for vendors who require payment to be available before delivery, which in turn ensures that unnecessary delay of the transaction is avoided.

The basic starting point for the present invention is a dedicated bank account which the customer has opened preferably with his regular bank connection. In this account there will be available at any time only the amount the customer wishes to have available for payments by means of the system according to the present invention. The insecurity associated with credit cards is thereby avoided when it comes to the extent of any losses.

Furthermore, every vendor who wishes to become associated with this system will have an account with an agent who administers the system. This agent is authorised by the customer to transfer money from the customer's dedicated bank account to vendor accounts. When the customer makes an order via the computer network the agent will check whether there are sufficient funds in the customer's dedicated account to pay for the ordered goods or services. If this is the case, the agent will ensure that the payment is transferred from the customer's dedicated account to the vendor's account with the agent. The funds will not be released, however, until the agent receives a confirmation that the goods and/or services have been delivered to the customer.

In a preferred embodiment of the invention, the agent has one or more clearing accounts in one or more banks. According to this embodiment, the relevant amount is not transferred directly to the vendor's account. Rather it is transferred to the agents clearing account, preferably an account with the same bank as the one where the customer has his account. Upon receipt of the confirmation that the goods and/or services has been delivered to the customer, or at some point in time following this receipt, the relevant amount is transferred from the agent's clearing account to the vendor's account. The agent's account may be the same account as the one to which the funds from the customer's account was transferred, but in the case where the vendor's account is with a different bank, the transfer will preferably be from an account the agent has with this second bank. Any necessary transfer of funds between the agent's different accounts with different banks will then preferably be processed at defined intervals in time, such as once a day.

In an alternative embodiment the funds remain in the customer's dedicated account until the agent has received the said confirmation, but the amount which is available to the customer in the dedicated account is reduced by the amount which has already been spent, but where the payment has not been carried out.

The invention will now be described in the form of embodiments with reference to the accompanying drawings.

Figure 1a illustrates how a customer can open a dedicated account associated with the payment system according to the present invention.

Figure 1b illustrates how the agent who administers the payment system according to the present invention is linked to vendors of goods and services.

Figure 2 illustrates the course of the transaction in an embodiment of the present invention.

The following embodiment is based on a realisation of the present invention in connection with trade via the Internet, where information is presented by means of so-called web-pages. A person skilled in the art will understand, however, that it will be possible to realise the invention by means of other data technical methods and via other computer networks. The examples associated with this embodiment should therefore not be interpreted as limiting.

Figure 1 shows a flowchart which indicates how a customer opens his account in the system. By means of his own computer the customer will be able to obtain a registration form 101 from the agent who administers the system according to the invention. Here the customer can fill in information 102 which is required by the agent. This might typically include full name, address, e-mail address, specification of the bank where the customer wishes to open his dedicated account, together with an irrevocable authorisation to the agent. It will be natural for the bank specified to be a bank with which the customer is already associated, thus enabling the transfer of money to the dedicated account to be performed quickly and inexpensively. Within the scope of the invention, however, it may be envisaged that the dedicated account might be opened in another bank, or with the agent. After the information in the registration form has been transferred to the agent, the

customer will be asked to provide a personal username and password 103.
The customer provides this 104 and if all the information is approved 105 by
the agent a personal information page 106 will be generated for the customer.
This page shows the status of the customer's account as well as information
5 associated with the use of the payment system.

In a preferred embodiment of the invention secured connections are used
between customer and agent when opening the account, for example in the
form of the encryption algorithms which are already built into the customer's
network browser.

10 After the account has been opened, the information page will naturally state
that the balance of the dedicated account is zero. In order to be able to use
the account, the customer must transfer money to the account. This can be
done via the Internet, by means of an account phone, by a visit to the bank or
by any other means. The customer is preferably only in a position to deposit
15 money in the dedicated account, and cannot withdraw money therefrom. The
customer may be given the opportunity of transferring money back to his
own bank account, provided no transactions are in progress involving his
dedicated account. After the money has been deposited in the account,
information thereon will be transferred from the bank to the agent, with the
20 result that an updated information page for the customer will state the
amount in the dedicated account.

As illustrated in figure 1b, the agent who administers the payment system
according to the invention will enter into agreements 111 with vendors who
wish to offer their goods and/or services via the computer network
25 concerned, for example the Internet, and be paid by means of the payment
system. A list 112 of such vendors will preferably be accessible to the
customer's computer from a central computer administered by the agent.
Furthermore, in connection with information they make available from their
computers linked to the computer network concerned, the various vendors
30 will state that they are associated with the payment system in question and
are authorised to receive payment by means thereof 113. Such information
may typically be in the form of a logo on the vendor's home page on the
Internet.

When the customer has opened his dedicated account and transferred money thereto, he or she is ready to undertake transactions. Figure 2 illustrates a typical course of such a transaction. On his local computer the customer will be able to see an offer of an item or service 201 from a vendor who is
5 capable of receiving payment by means of a system according to the present invention. From his local computer the customer selects goods and services by means of suitable data communication methods 202. In a preferred embodiment of the invention the vendor will present his offer by means of a so-called web-page, and the customer can then specify his order, for example
10 by clicking on a "purchase key" on this web-page. After specifying his order in this manner, the customer will be asked to identify himself, preferably by stating his user name and password 203. It will be possible, however, to employ other known methods for this identification, for example by means of a card reader connected to the customer's computer. After the customer has
15 identified himself 204, the agent will check the status of the customer's dedicated account and check the balance against the amount in the purchase order 221. Steps 211 - 213 show how the customer prepares his account before use by transferring money to his dedicated account.

If the agent finds that funds deposited in the customer's dedicated account
20 222 are insufficient to cover the purchase, the agent will refuse the order 231 and inform the customer accordingly. The customer will then be presented with the personal information page which indicates the status of the dedicated account 233. If the agent finds that the funds in the account are sufficient to cover the specified transaction the customer will be asked to
25 confirm the purchase 223. If the customer replies no to this confirmation 224, the transaction will be cancelled 225. If, however, the customer confirms the purchase 224, the agent will transfer the amount from the customer's dedicated account to the vendor's account with the agent 226. In an
alternative embodiment the amount is not transferred immediately, but the
30 information which is available to the customer concerning his account will show a balance which is reduced relative to the actual balance by an amount corresponding to the transaction amount. After the agent has updated the customer's account and the information page concerning this account 232, the customer will be shown his updated account information 233. At the same
35 time the agent will send a confirmation to the vendor that the money has been transferred to the vendor's account 227, or, in the alternative embodiment,

that the amount in question can be found in the customer's account and is no longer available to the customer. When the vendor receives this confirmation 228, goods and/or services will be delivered to the customer and the vendor will send a request to the agent that the payment should be released 229.

5 When the agent receives confirmation that goods and/or services have been delivered, the agent will release the payment to the vendor 230.

As already mentioned the transfer of payment does not have to be directly from the customer's to the vendor's account. In a preferred embodiment not illustrated in the drawing, the funds are first transferred to a clearing account 10 belonging to the agent and held in escrow, whereupon confirmation that payment has been secured is transferred to the vendor. The payment is then transferred to the vendor's account when the agent receives confirmation that the goods and/or services has been delivered, alternatively some time after this as part of a clearing of all transactions involving the vendor within a 15 period of time, such as once a day. Similarly the agent may operate with one such clearing account in each bank involved, such that transfer of funds between banks can be performed only once within a given period of time, such as once a day.

In a preferred embodiment of the method according to the invention which 20 has just been presented, these services are available via the Internet. All information will then be presented on so-called web-pages which are generated by means of HTML (Hyper Text Markup Language). Communication will then be performed by means of standard Internet protocols such as TCP/IP and HTTP (Hyper Text Transfer Protocol). This 25 will make it very easy to control communication between the computers involved, preferably the customer's local computer, the agent's central computer and the central computers for the respective vendors. Encryption algorithms which are built into the customer's network browser and in the respective web server software employed by the agent and vendors may also 30 be employed to the extent which is desirable. For example it will be a simple matter to present the registration form mentioned in connection with figure 1a by means of HTML. The subsequent communication between customer and agent can be performed in the normal manner for such forms, if desirable by means of encryption ("secure server"). The information received by the 35 agent's computer may then be used to manage the customer's dedicated account with the specified bank as well as generating a web-page which

shows the status of this account, together with any other data for the customer's account, such as, for example, a list of previous transactions.

In a similar manner the various vendors will be able to present their offers in the form of web-pages. As a customer indicates that he wishes to make an

5 order, the necessary information is transmitted to the agent's central computer, for example the vendor's identity is transferred together with the price of the item or service while at the same time the customer is asked to identify himself by means of user name and password. This may be done by means of a standard HTML-generated form. In this case the agent's central
10 computer will possess enough information to be able to evaluate whether the customer has sufficient funds in his dedicated account to cover the purchase order concerned. If this is the case, a new web-page will be generated by the agent's computer and presented to the purchaser. The purchaser will be able to confirm the purchase via this web-page by, for example, clicking on a key
15 on the screen. When the agent's central computer receives this confirmation it will be able to transfer the necessary funds from the customer's to the vendor's account and transfer a confirmation to the vendor. If the service in question is a data service it may be delivered automatically from the vendor's central computer to the customer's local computer. If not, the vendor's
20 computer will indicate in some other way that confirmation has been received from the agent, thus enabling the ordered item and/or service to be delivered in another fashion.

In a preferred embodiment the vendor receives delivery information from the agent. In this way the customer will not identify himself to the vendor, and
25 the customer does not have to state where the service or item should be delivered. This implies increased security, since a person who unlawfully gains access to the system by giving a false identity will be unable to order an item or service to be delivered to himself, but only to the person who is the lawful owner of the account. If such a false order should nevertheless be
30 made, the lawful owner of the account will be able to refuse to receive the service or item. Thus the agent will never receive any confirmation that the item or service has been delivered, and thereby will not release any sum of money to the vendor. The result will be that the vendor will have to take the item back, or not perform the service, and the amount will be returned from
35 the agent to the customer's dedicated account.

The systems and devices used in order to implement the present invention, will preferably consist of standard computer and communication means, as they are available to those skilled in the art. It will be understood that in order to implement the communication between the different computers in the computer network by way of standard communications protocols, off the shelf hardware may be used. Furthermore, the means for generating lists of vendors and other presentations to a customer will utilise standard database and computer graphics technologies as they are available to the skilled man. Preferably most of the means included in the invention will be implemented by way of standard computer hardware combined with computer programming that together achieves the objectives of the invention.

It will be understood that the greatest security is achieved if the present invention is used for payment of goods and services which can only be delivered to the customer personally, such as, for example, airline tickets, goods which are delivered to the customer's address as supplied to the agent, or other goods or services which are delivered directly to the customer.

If the system according to the present invention is used for payment of other goods or services, it may be necessary to combine it with additional security functions. One such function may be a digital certificate which is automatically stored in the customer's computer when the account is opened. It will then only be possible to order goods and services from this computer, and anyone who unlawfully wishes to utilise another person's account would then have to gain access to this computer. Said certificate can be stored in the customer's computer without the need for the customer himself to intervene, and requires no previous training by the customer.

PATENT CLAIMS

1. A method for payment of goods and/or services by means of transactions which are undertaken via a computer network, characterized in that a first account is opened for a customer, the customer
5 only being authorised to transfer money to the account, while an agent is authorised to withdraw money from the account,

that a second account is opened for a vendor of goods and/or services, that when he wishes to order an item or service, the customer specifies this,

10 that the agent compares the price of the item or service with the balance in the customer's account, refuses the transaction if said balance is lower than said price, and may ask the customer to confirm the order if the balance is higher than said price,

that - possibly following the customer's confirmation of the order - the
15 agent transfers an amount corresponding to the price of the item or service from the customer's account to the vendor's account, but without releasing said amount to the vendor, or at least makes said amount unavailable for further transactions,

20 that the agent transfers a confirmation to the vendor that the payment has been made,

that the vendor delivers the item or service to the customer and subsequently sends a request to the agent that payment should be released,

25 that the customer receives the item or service and that subsequently a confirmation is sent to the agent that the item or service has been received, and

that after having received said confirmation, the agent releases payment to the vendor.

2. Method according to claim 1, characterized in that said amount is made unavailable for further transactions
30 by remaining in the customers account but being made unavailable to the customer, and that the payment is released to the vendor by said amount being transferred from the customer's account to the vendors account either directly or after first being transferred to a clearing account.

3. Method according to claim 1,
characterized in that said amount is made unavailable for further transactions
by being transferred to a clearing account administered by the agent, and that
the payment is released to the vendor by said amount being transferred from
5 a clearing account administered by the agent to the vendor's account.

4. A payment system for payment of goods and/or services by means of
transactions which are performed via a computer network,
characterized in that it comprises one or more central computers of a first
type in which information is stored concerning offers of goods and/or
10 services which are offered by one or more vendors, where this information
can be transferred via a computer network to a local computer which is used
by a customer,

that the local computer is arranged to be able to transmit information
on an offer which a customer who uses the local computer wishes to order,
15 via the computer network to a central computer of a second type,

that the central computer of the second type is arranged to compare the
price of said offer with the balance of a dedicated account associated with the
user of the local computer, to refuse the transaction if said balance is lower
than the price of said offer and possibly to transfer a request for confirmation
20 of the order to the local computer if said balance is higher than the price of
said offer,

that the central computer of the second type is further arranged to
secure the payment of said item or service by implementing a transfer of an
amount corresponding to said price of said offer from said dedicated account
25 to an account belonging either to the vendor who is behind said offer or to
the agent, where said amount is made temporarily unavailable to the vendor;
or at least by blocking the amount in the customer's account,

and that the central computer of the second type is further arranged to
transfer information that the payment is secured to a computer which is
30 operated by said vendor of said item or service, with the result that the
vendor can implement delivery of said item or service, and that the central
computer of the second type is also arranged to receive a confirmation that
said customer has received said item or service, and subsequently to
implement release of said amount to the vendor.

5. A payment system according to claim 4,
characterized in that the central computer of the second type is further

arranged to be able to generate a presentation of data associated with the customer's dedicated account and transfer this presentation via said computer network to the local computer which is employed by the customer.

6. A payment system according to claim 4 or 5,

5 characterized in that the central computer is arranged to be able to generate a list of the central computers of the first type which present offers of goods and/or services and transfer this presentation via said computer network to the local computer which is employed by the customer.

7. A payment system according to one of the claims 4 - 6,

10 characterized in that said central computer of the second type is arranged to transfer a request for confirmation of the customer's identity to the local computer which is employed by the customer and not to implement transfer of payment from the customer's dedicated account to the vendor's account until it has received such confirmation.

8. A payment system according to claim 7,

15 characterized in that said request for confirmation of the customer's identity is a query regarding user name and password.

9. A payment system according to claim 7,

20 characterized in that a unique digital certificate is stored in the local computer and that said request for confirmation of the customer's identity is a query regarding the transfer of this certificate.

10. A payment system according to one of the claims 4 - 9,

25 characterized in that the central computer of the second type is arranged to be able to transfer information via said computer network to a local computer concerning how a customer can open his own account, to receive information transferred from the local computer concerning a customer who wishes to open his own account, and on the basis of the information received to open an account for such a customer.

11. A payment system according to one of the claims 4 - 10,

30 characterized in that said computers transfer information by means of known communication protocols, such as, TCP/IP.

12. A payment system according to one of the claims 4 - 11,

characterized in that the central computers of the first and second types

present information by means of HTML and that this information is transferred by means of HTTP.

13. A payment system according to one of the claims 4 - 12,
characterized in that the local computer and the central computer of the
5 second type are arranged to be able to use encryption algorithms which are
implemented in the standard software which is employed by them in order to
communicate via said computer network.

14. A method in a payment system for goods and/or services where
transactions are undertaken via a computer network,
10 characterized in that a specification is received from a customer specifying
an item or service which the customer wishes to purchase from a vendor,
that the price of the specified item or service is compared with the
balance of an account associated with said customer, the transaction being
refused if said balance is lower than said price, and the customer possibly
15 being asked to confirm the order if said balance is higher than said price,
that, upon receipt of confirmation from the customer if the customer
has been asked to give such confirmation, an amount in the customer's
account corresponding to the price of the specified item or service is made
unavailable for further transactions and also unavailable to the vendor,
20 that a confirmation is sent to said vendor that payment has been
implemented,
that a confirmation is received from the customer that the item or
service has been delivered, and
that payment is released to the vendor.

25 15. Method according to claim 14,
characterized in that said amount is made unavailable for further transactions
by remaining in the customers account but being made unavailable to the
customer, and that the payment is released to the vendor by said amount
being transferred from the customer's account to the vendors account either
30 directly or after first being transferred to a clearing account.

16. Method according to claim 14,
characterized in that said amount is made unavailable for further transactions
by being transferred to the vendor's account and there made temporarily

blocked, and that payment is released to the vendor by said blocked amount in the vendor's account being made available to the vendor.

17. Method according to claim 14,
characterized in that said amount is made unavailable for further transactions
5 by being transferred to a clearing account administered by the agent, and that
the payment is released to the vendor by said amount being transferred from
a clearing account administered by the agent to the vendor's account.

18. Device for a payment system for goods and/or services by means of
transactions which are undertaken via a computer network,
10 characterized in that it comprises means for receiving a specification of an
item or service a customer wishes to purchase, means for comparing the price
of said item or service with a balance of a specified first account, means for
refusing the transaction if said price is higher than said balance, means for
making said amount unavailable for further transactions, means for
15 transferring information indicating that said amount has been made
unavailable for further transactions, means for receiving confirmation that
said goods and/or services has been delivered, and means for implementing
release of said amount after receipt of such confirmation.

19. Device according to claim 18,
20 characterized in that said means for making said amount unavailable for
further transactions include means for blocking said amount in said first
account, and that said means for releasing said amount include means for
transferring said blocked amount to a second account.

20. Device according to claim 18,
25 characterized in that said means for making said amount unavailable for
further transactions include means for transferring said amount in said first
account to a second account and means for blocking these funds temporarily,
and that said means for releasing said amount include means for releasing
said blocked amount in said second account.

30 21. Device according to claim 18,
characterized in that said means for making said amount unavailable for
further transactions include means for transferring said amount to a clearing
account, and that said means for releasing said amount includes means for
transferring said amount from a clearing account to a second account.

22. Device according to one of the claims 18 - 21,
characterized in that it further comprises means for generating and
transferring a presentation of data associated with said first account.

5 23. Device according to one of the claims 18 - 22,
characterized in that it further comprises means for generating and
transferring a list of computers linked to the computer network from which
information can be obtained concerning goods or services which can be paid
for by means of the payment system.

10 24. Device according to one of the claims 18 to 23,
characterized in that it further comprises means for generating and
transferring a request for authorisation to use said first account.

25. Device according to claim 24,
characterized in that said authorisation is in the form of a user name and
password, or in the form of a unique digital certificate.

15 26. Device according to one of the claims 18 to 25,
characterized in that it further comprises means for transferring information
concerning how a new account of the same type as said first account can be
opened, means for receiving information which is necessary for opening such
an account, as well as means for opening such an account.

20 27. Device according to one of the claims 18 to 26,
characterized in that the means which are provided for transferring or
receiving information are arranged to do this by means of known
communication protocols such as, TCP/IP.

25 28. Device according to one of the claims 18 to 27,
characterized in that the means which are provided for transferring
information transfer this information by means of HTML and HTTP.

29. Device according to one of the claims 18 to 28,
characterized in that it comprises means for employing standard encryption
algorithms in the transfer and receipt of information.

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Fig. 1a

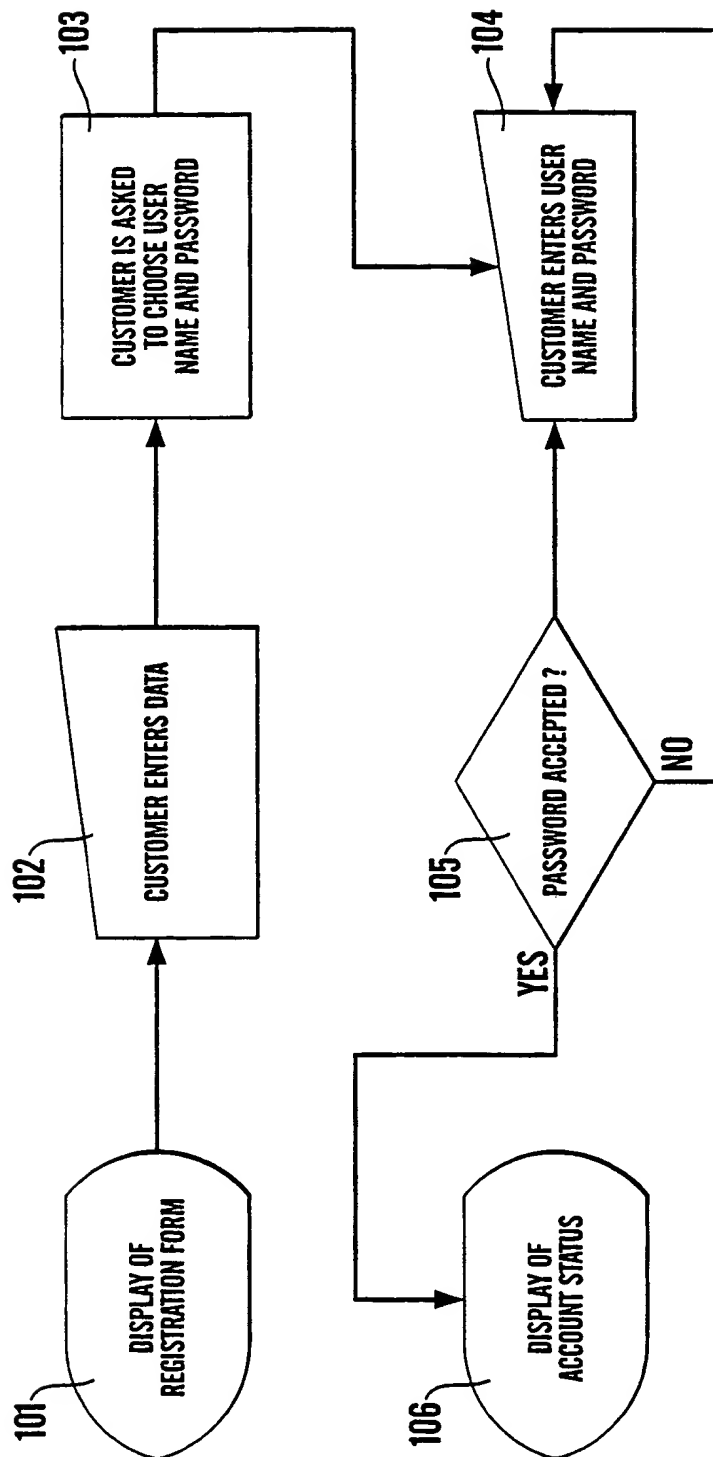
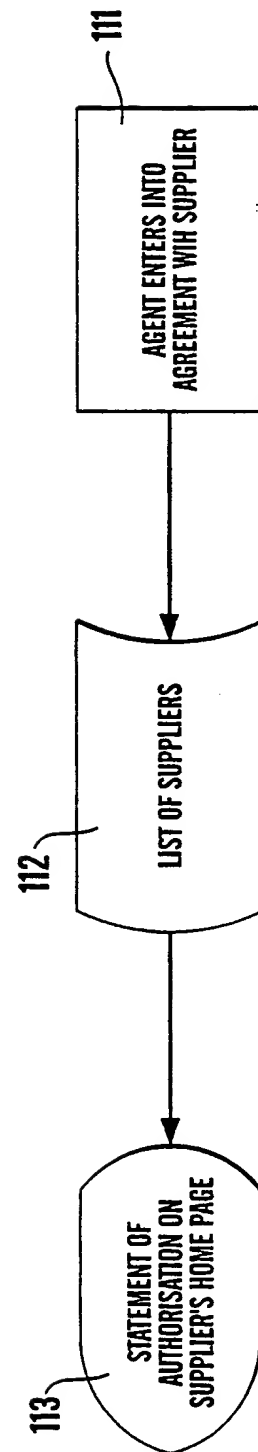
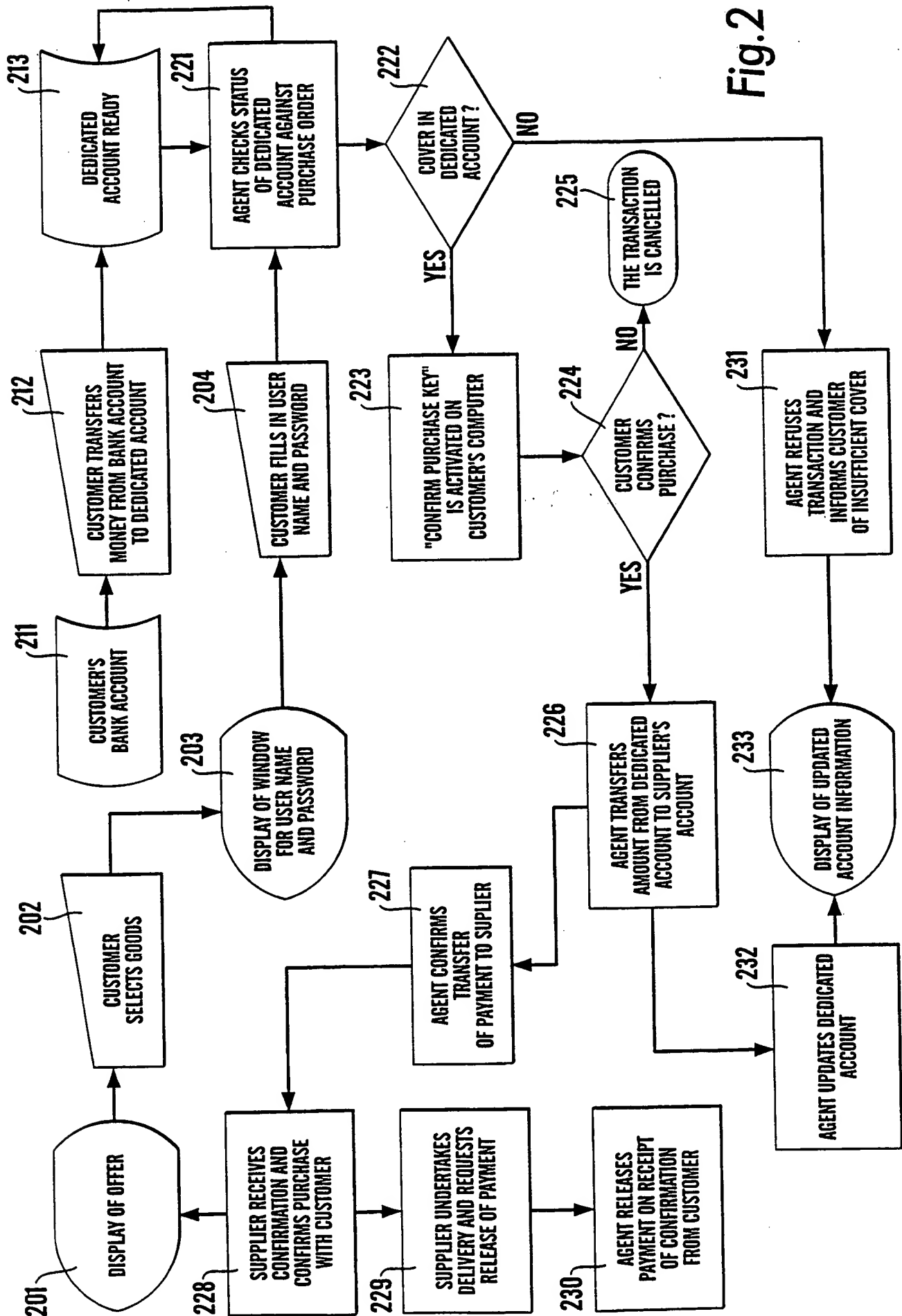


Fig. 1b



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Fig. 2



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